Small Business Innovation Research/Small Business Tech Transfer

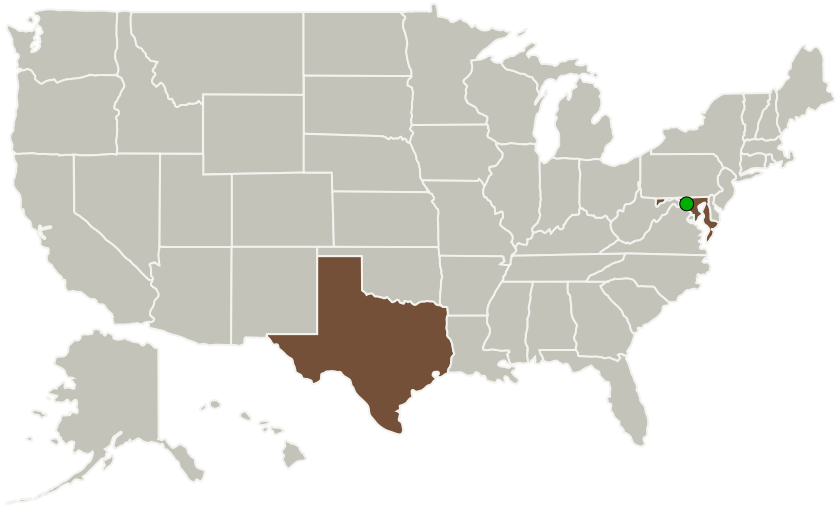
SpaceVPX Switch-Controller, Phase I

Completed Technology Project (2017 - 2017)

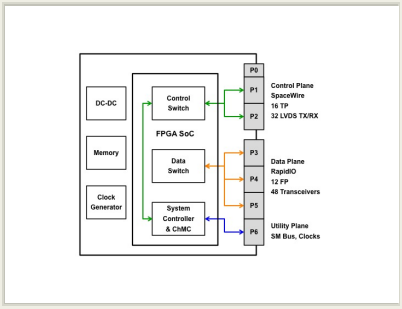
Project Introduction

Crossfield Technology proposes a SpaceVPX (VITA 78) Switch-Controller Module implemented in a state-of-the-art Field Programmable Gate Array (FPGA) System on Chip (SoC). The System Controller and Chassis Management Controller (ChMC) functions will be implemented in the embedded ARM processors and the Control and Data Switches will be implemented in the FPGA fabric. Crossfield proposes to use an FPGA SoC implemented in FinFET technology for the design, and to assess the radiation hardness of this FPGA SoC as part of the program. The FPGA SoC integrates sufficient logic elements and high-speed transceivers to implement a 16-port RapidIO Data Switch. Crossfield proposes to use 3D XPoint memory or MRAM to provide radiation hardness of the memory system. For space applications requiring more robust radiation hardness, the design can be ported to the radiation-hardened multi-core General Purpose Processor (GPP) under development by NASA plus one or more radiation-hardened FPGAs.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Crossfield Technology LLC	Lead Organization	Industry	Orlando, Florida
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



SpaceVPX Switch-Controller, Phase I Briefing Chart Image

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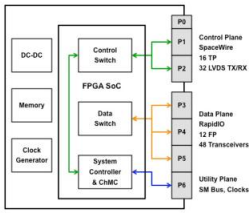
Primary U.S. Work Locations	
Maryland	Texas

Images



Briefing Chart Image
SpaceVPX Switch-Controller, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/133417)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Crossfield Technology LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

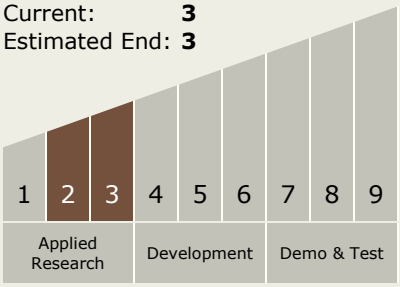
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Brett Mcmillian

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.2 Avionics Systems and Subsystems
    - TX02.2.5 High Speed Onboard Interconnects and Networks

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System